## WHAT IS CLAIMED IS:

1. A composition for use in embolizing blood vessels, comprising a nucleophilic component and a component containing a conjugated unsaturated bond, whereby the composition undergoes crosslinking within the blood vessel.

- 2. The composition of claim 1 wherein the nucleophilic component is selected from the group consisting of thiols, amines and mixtures thereof.
- 3. The composition of claim 1 wherein the nucleophilic component comprises at least one thiol.
- 4. The composition of claim 1 wherein the nucleophilic component is at least one material selected from the group consisting of pentaerythritol-tetrakis(3-mercaptopropionate) (QT), Dithiothreitol (DTT), and poly(ethylene glycol) hexathiol.
- 5. The composition of claim 1 wherein the component containing a conjugated unsaturated bond comprises at least one material selected from the group consisting of acrylates, vinylsulfones, acrylamides, quinones and vinylpyridiniums.
- 6. The composition of claim 1 wherein the component containing a conjugated unsaturated bond is at least one acrylate.
- 7. The composition of claim 1 wherein the component containing a conjugated unsaturated bond comprises at least one material selected from the group consisting of poly(ethyleneglycol)diacrylate, poly(propylene glycol)diacrylate, pentaerythritol triacrylate, and poly(ethylene glycol) tetraacrylate.
- 8. The composition of claim 1 wherein the nucleophilic component is at least one thiol and the component containing a conjugated unsaturated bond is at least one acrylate.
- 9. The composition of claim 8 wherein the nucleophilic component is at least one material selected from the group consisting of pentaerythritol-tetrakis(3-

mercaptopropionate), Dithiothreitol (DTT), and poly(ethylene glycol) hexathiol.

- 10. The composition of claim 9 wherein the component containing a conjugated unsaturated bond is at least one material selected from the group consisting of poly(ethyleneglycol)diacrylate, poly(propylene glycol)diacrylate, pentaerythritol triacrylate, and poly(ethylene glycol) tetraacrylate.
- 11. The composition of claim 8 wherein the component containing a conjugated unsaturated bond is at least one material selected from the group consisting of poly(ethyleneglycol)diacrylate, poly(propylene glycol)diacrylate, pentaerythritol triacrylate, and poly(ethylene glycol) tetraacrylate.
- 12. The composition of claim 1 wherein the composition further comprises a buffer solution.
- 13. The composition of claim 1 wherein the composition further comprises a surfactant.
- 14. The composition of claim 1 wherein the composition further comprises a base.
- 15. The composition of claim 1 wherein the composition gels within the blood vessel within 30 minutes of introduction.
- 16. The composition of claim 1 wherein the composition gels within the blood vessel within 15 minutes of introduction.
- 17. The composition of claim 1 wherein the composition further comprises at least one additional agent selected from the group consisting of radiopaque agents and nonsteroidal anti-inflammatory compounds.
- 18. The composition of claim 4 further comprising a second thiole precursor.
- 19. The composition of claim 18 wherein the second thiole precursor is dithiothreitol (DTT).
- 20. The composition of claim 2 wherein the acrylate precursor is polypropylene glycol diacrylate (PPODA).

21. The composition of claim 2 wherein the acrylate precursor is polyethylene glycol diacrylate (PEGDA).

- 22. The composition of claim 2 wherein the acrylate precursor is pentaerythritol triacrylate (TA).
- 23. The composition of claim 12 wherein the buffer is a phosphate buffer.
- 24. The composition of claim 14 wherein the base is NaOH.
- 25. The composition of claim 1 wherein the composition comprises:
  - (a) a buffer solution;
- (b) at least one nucleophilic component selected from the group consisting of pentaerythritol-tetrakis(3-mercaptopropionate), dithiothreitol (DTT), and poly(ethylene glycol) hexathiol;
- (c) component containing at least one unsaturated bond selected from the group consisting of poly(ethyleneglycol)diacrylate, poly(propylene triacrylate, diacrylate, pentaerythritol and poly(ethylene glycol) tetraacrylate; and
  - (d) a surfactant.
- 26. The composition of claim 26 wherein the surfactant is selected from the group consisting of sorbitan monooleate and polyethylene glycol-co-polypropylene glycol.
- 27. A composition for use in embolizing blood vessels, whereby the composition undergoes crosslinking within the blood vessel, wherein the composition comprises:
  - (a) a phosphate buffer solution;
- (b) at least two nucleophilic components selected from the group consisting of pentaerythritol-tetrakis(3-mercaptopropionate), dithiothreitol (DTT), and poly(ethylene glycol) hexathiol; and
- (c) at least three components containing a conjugated unsaturated bond selected from the group consisting of poly(ethyleneglycol)diacrylate, poly(propylene

glycol) diacrylate, pentaerythritol triacrylate, and poly(ethylene glycol) tetraacrylate.

- 28. A method of embolizing a blood vessel, comprising administering to the blood vessel a composition comprising a nucleophilic component and a component containing a conjugated unsaturated bond, whereby the composition undergoes crosslinking within the blood vessel.
- 29. The method of claim 28 wherein the nucleophilic component is selected from the group consisting of thiols, amines and mixtures thereof.
- 30. The method of claim 28 wherein the nucleophilic component comprises at least one thiol.
- 31. The method of claim 28 wherein the nucleophilic component is at least one material selected from the group consisting of pentaerythritol-tetrakis(3-mercaptopropionate) (QT) and poly(ethylene glycol) hexathiol.
- 32. The method of claim 28 wherein the component containing a conjugated unsaturated bond comprises at least one material selected from the group consisting of acrylates, vinylsulfones, acrylamides, quinones and vinylpyridiniums.
- 33. The method of claim 28 wherein the component containing a conjugated unsaturated bond is at least one acrylate.
- 34. The method of claim 28 wherein the component containing a conjugated unsaturated bond comprises at least one material selected from the group consisting of poly(ethyleneglycol)diacrylate, poly(propylene glycol)diacrylate, pentaerythritol triacrylate, and poly(ethylene glycol) tetraacrylate.
- 35. The method of claim 28 wherein the nucleophilic component is at least one thiol and the component containing a conjugated unsaturated bond is at least one acrylate.
- 36. The method of claim 35 wherein the nucleophilic component is at least one material selected from the group

consisting of pentaerythritol-tetrakis(3-mercaptopropionate) and poly(ethylene glycol) hexathiol.

- 37. The method of claim 36 wherein the component containing a conjugated unsaturated bond is at least one material selected from the group consisting of poly(ethyleneglycol)diacrylate, poly(propylene glycol) diacrylate, pentaerythritol triacrylate, and poly(ethylene glycol) tetraacrylate.
- 38. The method of claim 35 wherein the component containing a conjugated unsaturated bond is at least one material selected from the group consisting of poly(ethyleneglycol)diacrylate, poly(propylene glycol) diacrylate, pentaerythritol triacrylate, and poly(ethylene glycol) tetraacrylate.
- 39. The method of claim 28 wherein the composition further comprises a buffer solution.
- 40. The method of claim 28 wherein the composition further comprises a surfactant.
- 41. The method of claim 28 wherein the composition further comprises a base.
- 42. The method of claim 28 wherein the composition gels within the blood vessel within 30 minutes of introduction.
- 43. The method of claim 28 wherein the composition gels within the blood vessel within 15 minutes of introduction.
- 44. The method of claim 28 wherein the composition further comprises at least one additional agent selected from the group consisting of radiopaque agents and nonsteroidal anti-inflammatory compounds.
- 45. The method of claim 31 further comprising a second thiole precursor.
- 46. The method of claim 45 wherein the second thiole precursor is dithiothreitol (DTT).
- 47. The method of claim 29 wherein the acrylate precursor is polypropylene glycol diacrylate (PPODA).

48. The method of claim 29 wherein the acrylate precursor is polyethylene glycol diacrylate (PEGDA).

- 49. The method of claim 29 wherein the acrylate precursor is pentaerythritol triacrylate (TA).
- 50. The method of claim 39 wherein the buffer is a phosphate buffer.
  - 51. The method of claim 42 wherein the base is NaOH.
- 52. The method according to claim 28 further comprising increasing the pH of the composition prior to introducing the composition into the reproductive duct.
- 53. The method according to claim 28 wherein the composition is introduced into the blood vessel through a catheter.
- 54. The method according to claim 53 wherein the catheter is a balloon catheter.
- 55. The method according to claim 28 wherein the blood vessel for embolization has one of either an arteriovenous malformation or any other abnormal vasculature.